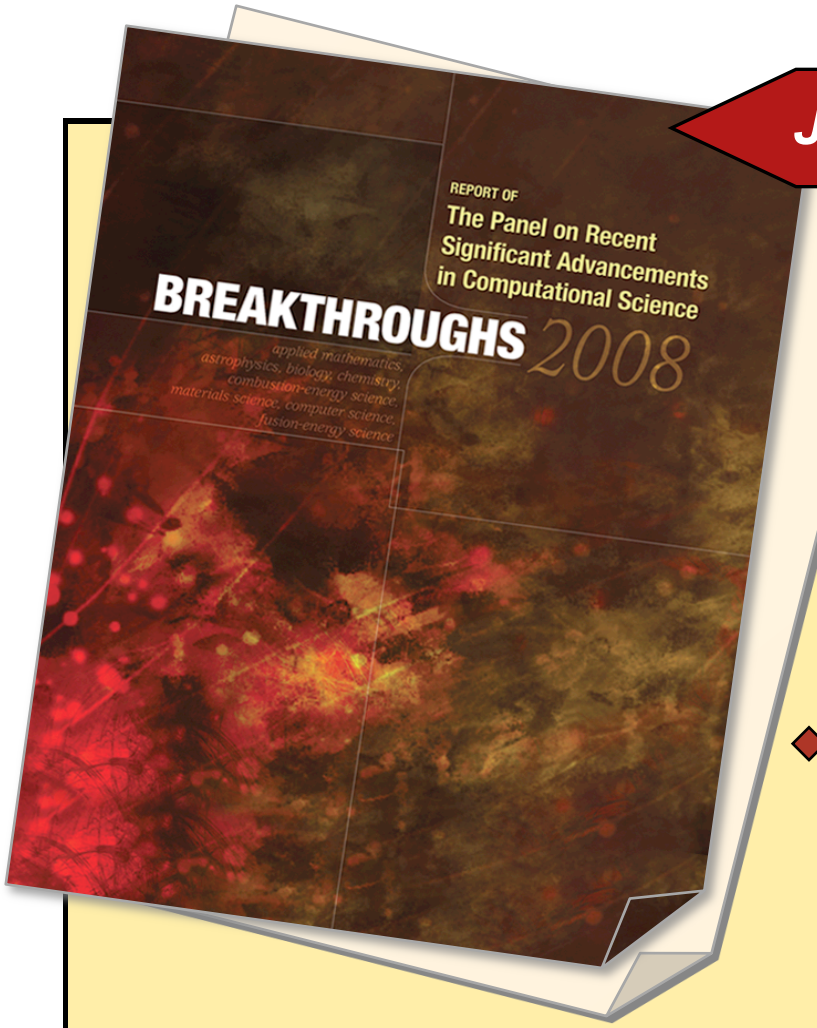
NCCS Snapshot
The Week of October 27, 2008

NATIONAL CENTER
FOR COMPUTATIONAL SCIENCES

Oak Ridge National Laboratory
U.S. Department of Energy

Oak Ridge Delivers Several Breakthroughs



Jaguar makes mark on ASCR document

- A recently released document showcasing 10 scientific computing milestones includes five projects conducted at the NCCS
- The document, titled "Breakthroughs 2008," chronicles major recent advances in simulation under the auspices of the DOE's ASCR program
- The ORNL accomplishments, which represent half of the total list, took place on the laboratory's Cray XT4 known as Jaguar.

Meet the Performance Police

This image was produced from a Carbon-Land Model Inter -comparison Project (C-LAMP) simulation performed as part of a SciDAC2 project on NCCS supercomputers.

"Our contribution is getting the component models to run as efficiently as possible . . . We're kind of the performance police."

Pat Worley, ORNL researcher

Pat Worley's team fixes problems that threaten simulations

- **When software engineers need help, they turn to ORNL's Pat Worley**
- **Worley, along with Arthur Mirin of LLNL and Raymond Loy of ANL, is leading a SciDAC project to scale up climate codes**
- **This enables researchers to solve larger problems by using more processors and to evaluate software and new high -performance computing platforms**
- **Recent work improved performance 2.5-fold on benchmark problems on ORNL's Cray XT4**

Phoenix Makes Way for Petascale Age

- ORNL's Phoenix supercomputer, still one of the fastest vector systems in the world, was taken out of service at the beginning of October
- Phoenix was critically important to progress in fields such as computational fluid dynamics, climate science, fusion studies, astrophysics, and materials science
- In its 5½ years at ORNL, Phoenix rose as high as No. 17 on the TOP500 list of the world's fastest supercomputers

"Many of our users loved working on Phoenix. It was a fantastic machine."

Doug Kothe, NCCS Director of Science

Dismantling the Phoenix Cray X1E supercomputer

Venerable vector system retired as next generation comes on line

New System Maintaining Software for NCCS Users

"NCCS Software Environment" streamlines researchers' third-party preferences

- The NCCS currently supports over 70 different (nonvendor) libraries, tools, and applications for its Cray XT4 system alone
- To organize these utilities, NCCS staff member Mark Fahey has created a new suite of tools and policies for installing and maintaining users' preferred software
- Among the package's features is the automatic creation of application web pages for the center's users
- Dubbed the NCCS Software Environment, the new tools package adds up to big savings in money via big savings in time for the NCCS

Mark Fahey